AMENDMENTS TO THE CLAIMS

1-88. (Canceled)

89. (New) A vehicle suspension system for a vehicle having a body, the body having a pitch center and a roll center, the vehicle having at least one ground engaging vehicle support assembly, the vehicle having a reaction center, comprising:

(a) at least one tie structure interposed between the vehicle support assembly and the body of the vehicle to serve as the path for the forces imposed on the vehicle that travel between the pitch or roll center and the support assembly, comprising a tie structure selected from the group consisting of:

(i) a singular tie structure interposed between the vehicle support assembly and the body;

(ii) a tie structure at the front of the vehicle interposed between the front portion of the vehicle and a front vehicle support assembly and/or interposed between the rear portion of the vehicle and a rear vehicle support assembly; and

(iii) a tie structure at each of the vehicle support assemblies interposed between a corresponding vehicle support assembly and the body;

(iv) a tie structure interposed between the body and multiple vehicle support assemblies; and

(v) a tie structure at individual vehicle support assemblies and interposed between a corresponding vehicle support assembly and the body at one location of the vehicle and at another location of the body, a tie structure interposed between the body and multiple vehicle support assemblies;

(b) a first interconnecting system for interconnecting two or more of the: (i) vehicle support assembly, (ii) the tie structure(s), and (iii) the body so as to allow one of the

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pitch center, roll center and pitch and roll center, such center being located at an elevation above the reaction center of the vehicle, to move on the direction of the forces that are imposed on the vehicle, thereby to preclude the applicable roll center, pitch center, or pitch and roll center from serving as the reaction center of the vehicle;

(c) a second interconnecting system for interconnecting the tie structure(s) and the body about the pitch center or the roll center, both centers being located at elevations above the reaction center of the vehicle, whereby upon forces being imposed on the vehicle during operation of the vehicle, the body rotates around the center(s) of rotation relative to the tie structure, in the direction opposite to the direction of the forces acting on the vehicle in pitch or roll; and

(d) a load control system interposed and interconnecting the body, the vehicle support assembly and/or the tie structure(s), wherein the load control system generating a resistance to the movement of the pitch or roll center(s) which is greater than the resistance generated by the load control system to the movement of the center of gravity of the vehicle due to forces applied to the vehicle during operation of the vehicle.

90. (New) A vehicle suspension according to Claim 89, wherein the load control system having a dampening system to dampen the movement of the pitch center, the roll center, the center of gravity, and the support assembly relative to the ground.

91. (New) A vehicle suspension system according to Claim 89, wherein:

the first interconnection system comprising a pivot arm assembly associated with each of the ground engaging vehicle support assemblies, the pivot arm assemblies being pivotally coupled to the tie structures as well as to the vehicle support structures; and

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the load control system acting between the pivot arm assembly and the tie structure to enable the pivot assembly to nominally support the tie structure(s).

92. (New) A vehicle suspension system according to Claim 91, wherein the load control system is operably interconnected between corresponding laterally spaced apart pivot arm assemblies.

93. (New) A vehicle suspension system according to Claim 92, wherein a biasing load is applied to the pivot arm that must be overcome to permit the tie structure to move relative to the pivot arm.

94. (New) A vehicle suspension system according to Claim 92,

the load control system comprises a relatively stiff resistance mechanism to limit the rotation of the pivot arm assembly relative to the tie structure; and

further comprising relatively compliant load control subsystem carried by the pivot arm assembly and interconnected with the body to control the movement of the body relative to the tie structure(s).

95. (New) A vehicle suspension system according to Claim 94, wherein the load control system comprises a crank structure mounted on the body, a push rod pivotally connected to the crank structure and pivotally connected to the pivot arm assembly of the first interconnection system.

96. (New) A vehicle suspension system according to Claim 95, further comprising a second linear actuator connected to the crank arm assembly to limit the rotation of the crank arm assembly during vehicle operation.

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97. (New) A vehicle suspension system according to Claim 91, wherein the end portions of the pivot arm assembly are coupled to the tie structure to be movable relative to the tie structure in a direction generally laterally relative to the length of the body, including during cornering of the vehicle.

98. (New) A vehicle suspension system according to Claim 89, wherein the second interconnection system comprising a plurality of first rollers engaging within first guide ways defined by the tie structure, the first guide ways shaped to allow the first rollers or the first guide ways to move as the body moves in either the pitch and/or roll directions, thereby to define the pitch and/or roll center of the body.

99. (New) A vehicle suspension system according to Claim 98, wherein the first rollers and/or the first guide way is mounted on the tie structure, the body, or between the tie structure and the body, thereby to define the roll and pitch centers of the body.

100. (New) A vehicle suspension system according to Claim 98, wherein said second interconnection system further comprising a second set of rollers that engage corresponding the second guide ways located within the body, the body second guide ways shaped to allow the second rollers or the second guide ways to move relative to the body during tilting of the body in the pitch and/or roll directions.

101. (New) A vehicle suspension system according to Claim 98, wherein the configuration of the guide ways may be adjusted to change the location of the pitch and/or roll centers.

102. (New) A vehicle suspension system according to Claim 89, further comprising:

an axle interconnecting laterally spaced apart vehicle support assemblies;

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the first interconnection system interconnecting the tie structure with the axle, said first interconnection system permitting relative movement between the tie structure(s) and the axle during acceleration and braking of the vehicle.

103. (New) The vehicle suspension system according to Claim 102, wherein the tie structures are slideable in the upright direction relative to the axle, and the second interconnection system resiliently couples the tie structures to the axle while resisting the upright movement of the tie structure relative to the axle.

104. (New) A vehicle suspension system according to Claim 102, wherein the second interconnection system having an upper connection structure connecting an upper portion of the tie structure with the body and a lower connection structure interconnecting the lower portion of the tie structure with the body.

105. (New) A vehicle suspension system according to Claim 89, wherein the first interconnection system interconnecting the tie structure to the vehicle support assemblies and also interconnecting the body to the vehicle support assemblies, wherein the first interconnection system is movable in the upright direction to enable the body to move in at least one of the pitch and roll directions relative to the tie structure in the direction opposite to the direction of forces applied to the vehicle during cornering and braking.

106. (New) A vehicle suspension system according to Claim 105, wherein the load control system comprising first springs coupled between the first interconnection system and the body and the second springs coupled between the first interconnection system and the vehicle support assemblies, wherein the second springs are stiffer than the first springs.

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107. (New) A vehicle suspension system according to Claim 105, wherein said first interconnection system comprising an upright pillar structure, the pillar structure having an upper portion slidably coupled to the body, and a lower portion slidably coupled to the tie structure.

108. (New) A vehicle suspension system according to Claim 107, wherein the second interconnection system comprising a first spring disposed between the body and vehicle support assembly and a second spring disposed between the pillar structure and the tie structure.

109. (New) A vehicle suspension system according to Claim 108, wherein the second spring is stiffer than the first spring.

110. (New) A vehicle suspension system according to Claim 108, further comprising the steering system connected to the pillar structure to rotate the pillar structure and thereby turn the hub carriers relative to the tie structure.

111. (New) A vehicle suspension system according to Claim 89:

wherein the support assembly comprising a wheel assembly;

further comprising a steering system coupled to the wheel assembly to turn the wheel assembly relative to the tie structure about a steering axis, with the tie structure remaining rotationally stationary relative to the vehicle.

112. (New) A vehicle according to Claim 89, wherein the tie structure and the vehicle support assembly are an integral structure, thereby eliminating the need for the load control system acting between the tie structure and hub.

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113. (New) A vehicle suspension system according to Claim 112, wherein the second interconnection system comprises a plurality of A-arm structures interconnected between the body and the tie structure, the A-arm structures vertically movable relative to the tie structure.

114. (New) A vehicle suspension system according to Claim 113, wherein the tie structure comprises an upright slide structure slidably engageable with the outboard ends of the A-arm structures.

115. (New) A vehicle suspension system according to Claim 114, wherein the second interconnection system further comprises load controllers interconnected between the A-arm structures and the corresponding vehicle support assemblies.

116. (New) A vehicle suspension system according to Claim 89, wherein the second interconnection system comprising a plurality of pivot arm structures interconnected between the body and the tie structure, the pivot arm structures coupled to the tie structure about a singular axis and the pivot arm structures coupled to the body about a single pivot axis, the pivot arm structures orientated relative to the body to be in alignment with a center of rotation of the body.

117. (New) A vehicle according to Claim 116, wherein the pivot arm structures coupled to the body and/or tie structure about two axes, the pitch axis and the roll axis of the body.

118. (New) A vehicle suspension system according to Claim 117, wherein the pivot arm structures are coupled to the tie structure and body to be adjustable in orientation and position to change the location of the center of rotation of the body.

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119. (New) A vehicle suspension system according to Claim 89, further comprising a tie structure moving system interposed between the tie structure and the vehicle support assemblies, whereby the tie structure and body are capable of moving relative to the vehicle support assemblies in at least one of the longitudinal and transverse directions.

120. (New) A vehicle suspension system according to Claim 119, wherein the pitch and/or roll centers are moveable relative to the vehicle support assemblies by the action of the tie structure moving system.

121. (New) A vehicle suspension system according to Claim 89, wherein the second interconnection system comprising a slide system along which the body is slideable relative to the tie structure upon a selected level of force applied to the body relative to the tie structure.

122. (New) A vehicle suspension system according to Claim 121, wherein the slide system comprising a slideway carried by one of the tie structure, the body or between the body and the tie structure.

123. (New) A vehicle suspension system according to Claim 121, wherein the slide system comprises a powered subsystem for powering the movement of the body relative to the tie structure.

124. (New) A vehicle suspension system according to Claim 121, wherein the second interconnection system further comprises a resistor acting on the slideway system to resist relative movement between the body and tie structure.

125. (New) A vehicle suspension system according to Claim 89, wherein the first interconnection system comprising a slide system along which the tie structure is slidable

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relative to the support assembly to cause the pitch and roll centers to move in the direction with force applied to the vehicle.

126. (New) A vehicle suspension system according to Claim 89, wherein the second interconnection system characterized by pivot arm structures spaced apart from each other, each of the pivot arm structures having a bottom portion pivotally coupled to the tie structure and each having a top portion pivotally acting on the adjacent portion of the body, the pivot arm structures enabling the body to tilt relative to the tie structure about a longitudinal axis of the vehicle and enabling the body to pivot relative to the tie structure about a transverse axis of the vehicle.

127. (New) A vehicle suspension system according to Claim 126, wherein the second interconnection system supporting the body relative to the tie structure to allow the body to move longitudinally and/or laterally relative to the tie structure upon an impact force of sufficient level being applied to the body.

128. (New) A vehicle suspension system according to Claim 89, wherein the second interconnection system comprising a plurality of link structures having a first end portion pivotally connected to the tie structure and a second end portion pivotally connected to the body, said link structure is oriented relative to the tie structure to extend toward a common point along the longitudinal axis of the body.

129. (New) A vehicle suspension system according to Claim 128, wherein the link structures comprise pivot arm assemblies having a base portion and an apex portion, and wherein the apex portions of the pivot arm structures extend toward a common point in relationship to at least one other pivot arm structure.

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130. (New) A vehicle suspension system according to Claim 128, wherein said first interconnection system comprising a pivot arm assembly interconnecting a corresponding wheel support assembly and an adjacent portion of the tie structure; and further comprising a torsion arm interconnecting and acting between two adjacent pivot arms assembly.

131. (New) A vehicle suspension system according to Claim 128, wherein said link structures are adjustable in length.

132. (New) A vehicle suspension system according to Claim 89, wherein the load control system further comprising powered actuators to sense movement of the body, tie structure and/or vehicle support assembly to restore the body and/or tie structure to desired position after and in reaction to the movement of one or more of the body, the structure and vehicle support assembly during operation of the vehicle.

133. (New) A vehicle suspension system according to Claim 132;

(a) wherein said first interconnection system comprising pivot arms extending outwardly from the tie structure and coupled to the vehicle support assemblies, a crank arm extending laterally from the pivot arm at a location distal from the location that the pivot arm is coupled to the vehicle support assemblies and an actuator to manipulate the crank arms thereby to raise and lower the tie structure relative to the vehicle support assemblies;

(b) wherein portions of the second interconnection system defining at least one axis along which the body is pivotal relative to the tie structure, the second interconnection system comprising lift actuators disposed between the tie structure and the body, said lift actuators operable to raise and lower the adjacent portions of the body relative to the tie structure; and

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(c) further comprising a coordination system whereby when the body lowers relative to the tie structure, a force is applied to a corresponding support assembly causing the adjacent portion of the tie structure to rise.

134. (New) A vehicle suspension system according to Claim 133:

wherein the actuators of the first interconnection system comprising fluid actuators;

wherein the lift actuators acting between the tie structure and the body comprising fluid actuators; and

wherein the coordination system interconnecting the tie structure actuators with the lift actuators whereby the retraction of the tie structure actuators results in corresponding extension of the lift actuators, and extension of the tie structure actuators results in corresponding retraction of the lift actuators.

135. (New) A vehicle suspension system of Claim 89, comprising:

(a) a two-wheeled vehicle wherein the vehicle suspension system comprising a front and rear wheel assembly;

(b) the tie structure interposed between the front and wheel assemblies;

(c) the first interconnection system interconnecting the tie structure with the front and rear wheel assemblies, said first interconnection system comprising a front torsion bar assembly disposed between the front wheel assembly and the adjacent portion of the tie structure and a rear torsion bar assembly disposed between the rear wheel and the adjacent portion of the tie structure;

(d) the second interconnection system interconnecting the body to tie structure, said second interconnection system comprising link arms extending upwardly from longitudinally spaced apart locations of a tie structure with the upper ends of the link arms

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pinned to the body, said link arms disposed towards each other in the upward direction towards an intersection point that serves as a pitch center of the two-wheeled vehicle; and

(e) the load control system comprising load controllers disposed between the wheel assemblies and the body, said load control means having a spring rate that is lower than the spring rate of the front and rear torsion bar assemblies.

136. (New) A vehicle suspension system according to Claim 135, further comprising a drive train, wherein the drive train functions as part of the tie structure.

137. (New) A vehicle suspension system according to Claim 135, further comprising a drive train mounted on the tie structure.

138. (New) A vehicle suspension system according to Claim 135, comprising a motorcycle having a front fork assembly, wherein the front torsion bar assembly is disposed between the front fork assembly and the adjacent portion of the tie structure.

139. (New) A vehicle suspension system according to Claim 89:

(a) further comprising a hub carrier associated with each vehicle support assembly;

(b) a separate tie structure associated with each hub carrier and located adjacent a corresponding hub carrier;

(c) wherein the second interconnection system comprises a plurality of pivot arms coupled between the tie structure and corresponding portions of the body, said pivot arms oriented in a direction corresponding to the roll or pitch center of the vehicle.

140. (New) A vehicle suspension system according to Claim 139, wherein the pivot arms of the first interconnection system are vertically spaced apart relative to the tie structure.

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141. (New) A vehicle suspension system according to Claim 139, wherein the tie structure comprises an upright structure disposed inwardly adjacent the hub carrier.

142. (New) A vehicle suspension system according to Claim 141, wherein the second interconnection system comprising a plurality of pivot arms extending between the hub carrier and the tie structure upright structure and a relatively stiff second load controller coupled between the hub carrier and the upright structure.

143. (New) A vehicle suspension system according to Claim 89:

(a) comprising a hub carrier associated with each vehicle support assembly;

(b) comprising a separate tie structure associated with each hub carrier and located adjacent a corresponding hub carrier;

(c) wherein the a first interconnecting system interconnecting the tie structures and the body to establish a longitudinal roll axis and/or a transverse pitch axis at a location above the center of gravity of the body whereupon forces imposed on the vehicle during operation of the vehicle cause the body to roll about its longitudinal axis and/or pitch about its transverse axis in the direction opposite the direction of the force acting on the vehicle;

(d) wherein the second interconnection system interconnecting the tie structures to the hub carriers ;

(e) wherein the load control system coupled between the hub carriers and the body; and

(f) wherein the second interconnection system and the load control system cooperating to establish the roll axis and/or the pitch axis of the body above the reaction center of the vehicle to enable the roll axis and/or the pitch axis to move in the direction of the forces

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imposed on the vehicle during operation of the vehicle, thereby to preclude the roll axis and/or the pitch axis from serving as the reaction center of the vehicle.

144. (New) A vehicle suspension system according to Claim 143, wherein the first interconnection system comprising a plurality of pivot arms coupled between the tie structure and corresponding portions of the body, said pivot arms oriented in a direction corresponding to the roll center of the vehicle.

145. (New) A vehicle suspension system according to Claim 89, wherein at least one of the first interconnection system and the second interconnection system may be characterized by a powered system to cause relative movement between the tie structure and vehicle support assemblies and/or between the tie structure and the body.

146. (New) A vehicle suspension system according to Claim 89, wherein the load control system characterized as being powered to actively move or limit the movement of the body relative to the vehicle support assemblies and/or the tie structure.

147. (New) A vehicle suspension system according to Claim 89, wherein the body is pivotal relative to the tie structure about a longitudinal axis and about a transverse axis, the longitudinal and transverse axis being a different elevations relative to the support assembly.

148. (New) A vehicle suspension system according to Claim 89, wherein at least one of the longitudinal and transverse axis being above the center of gravity of the vehicle.

149. (New) A vehicle suspension system according to Claim 89, wherein the first interconnection system, the second interconnection system, and/or the load control system, operate to tilt the body inwardly during cornering and/or tilt the tie structure to a limited degree

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outwardly during cornering, thereby resulting in the vehicle support assemblies being tilted somewhat inwardly during vehicle cornering to achieve a positive dynamic camber of the vehicle support assemblies.

150. (New) A vehicle suspension system according to Claim 89, further comprising a drive train for powering the vehicle, said drive train either constituting a portion of the tie structure or located within the confines of the tie structure.

151. (New) A vehicle suspension system according to Claim 89, further comprising a surface structure carried by the body and/or tie structure, said surface structure comprising a surface over which air flows during vehicle travel to apply a load having a downward component to the body and/or tie structure during vehicle travel.

152. (New) A vehicle suspension system according to Claim 89, wherein the body is disposed within the perimeter of the tie structure.

153. (New) A vehicle suspension system according to Claim 89, wherein the second interconnecting system comprising a trunion structure carried between the body and the tie structure; thereby to permit the body to move generally longitudinally and generally laterally of the tie structure relative to support assembly.

154. (New) A vehicle suspension system according to Claim 153, wherein the sliders are pre-loaded relative to the trunion structure to resist movement of the sliders relative to the trunion structure.

155. (New) A vehicle suspension system according to Claim 89, wherein the tie structure is longitudinally expandable and contractible.

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156. (New) A vehicle suspension system according to Claim 155, wherein the tie structure composes the forward section, rearward section, and its central connection section, the central connection section being telescopically engageable with the tie structure forward section and a tie structure rearward section.

157. (New) A vehicle suspension system according to Claim 89, wherein the second interconnection system applies resistance to the pitch and roll of the body.

158. (New) A vehicle suspension system of Claim 89 integrated into a trailer of a tractor-trailer combination, the tractor of the tractor-trailer combination having a frame and a rear drive axle and the trailer having a rear axle:

(a) wherein the body is in the form of a load-carrying platform of the trailer;

(b) the tie structure composed of the tractor frame and a rearward section associated with the rear axle of the trailer;

(c) further comprising a fifth wheel interposed between the load-carrying platform and the tie structure;

(d) the first interconnection system interconnecting the forward tie structure section with the tractor rear drive axle and interconnecting the rearward tie structure section with the trailer rear axle;

(e) the second interconnection system interconnecting the forward tie structure section with the fifth wheel and interconnecting a rear portion of the load-carrying platform with the rear tie structure section; and

(f) the load controllers disposed between the fifth wheel and the forward tie structure section and disposed between the rear portion of the load-carrying platform and the rear tie structure section.

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159. (New) The vehicle suspension system according to Claim 158, wherein the fifth wheel is mounted on suspension system supported by a tie structure carried by the tractor rear axle.

160. (New) The vehicle suspension system of Claim 89 integrated into a trailer having a rear axle, wherein:

(a) the body is in the form of a load-carrying element supported by the support assembly;

(b) the second interconnection system comprising forward pivot arms interconnecting a tie structure with the load-carrying element, and rearward pivot arms interconnecting a tie structure with the load-carrying element, the forward and rearward pivot arms enabling the load-carrying element to pivot relative to a tie structure about a transfer pitch axis and about a longitudinal roll axis in a direction opposite to the direction that cornering forces and braking forces are applied to the load-carrying element; and

(c) the load controllers disposed between the load-carrying element and the tie structure.

161. (New) The vehicle suspension system of Claim 160, wherein the trailer is connectable to a hitch assembly, the hitch assembly mounted on a suspension system to enable the body to move in the direction of the forces that are applied to the body during vehicle operation.

162. (New) A vehicle suspension system according to Claim 89 incorporated into a railway car, having a car body and an axle structure, wherein:

(a) the tie structure is interposed between the car body and the axle structure;

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(b) the first interconnection system connecting the tie structure to the axle structure;

(c) the second interconnection system, interconnecting the tie structure to the car body; and

(d) the load controllers disposed between the axle structure and the car body.

163. (New) A vehicle suspension system according to Claim 162, wherein the tie structure composed of a structure selected from the group consisting of: a torsion bar assembly connected to the axle structure; and the substantially nominally horizontal double piston cylinder assembly connected to the axle structure.

164. (New) A vehicle suspension system according to Claim 163, wherein the load controllers selected from the group consisting of: spring/shock absorber assemblies extending upwardly from the axle assembly and coupled to an overhead portion of the body; and air pillow structures supporting load-bearing column structures interconnected to upper portions of the body.

165. (New) A vehicle suspension system according to Claim 89, wherein the load control system interposed and interconnecting the body with the support assembly and/or the structure being load adjustable, and the load control system acting between the support assembly and the tie structure being load adjustable.

166. (New) A vehicle suspension system according to Claim 89, wherein the first interconnecting system, the second interconnecting system, and the load control system being coordinated whereby when a wheel support assembly raises relative to the remainder of the vehicle, the tie structure is raised and the body lowered relative to the raised portion of the tie

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structure, tending to keep the body relatively level, and when the vehicle support assembly lowers relative to the vehicle, the tie structure lowers and the body tends to raise relative to the portion of the tie structure lowering, thereby tending to keep the body relatively level.

167. (New) A vehicle suspension system according to Claim 89, wherein a load control system is integrated into at least a portion of the second interconnecting system, whereby the location and orientation of the second connection system defines the pitch centers and/or roll center.

168. (New) A vehicle suspension system according to Claim 89, further comprising a drive system for the vehicle, said drive system incorporated into and carried by the vehicle support assembly.

169. (New) A vehicle suspension system according to Claim 89, further comprising a drive train for the vehicle, said drive train located within the vehicle body.

170. (New) A vehicle suspension system according to Claim 89, further comprising a body moving system interposed between the tie structure and the body, the body moving system having a first subsystem carried by the body and a second subsystem engageable with the first subsystem and carried by the tie structure, whereby the body is capable of moving relative to the tie structure in at least one of the directions longitudinally and transversely relative to the tie structure in response to impact loads imposed on the vehicle.

171. (New) A vehicle suspension system according to Claim 170, further comprising at least one occupant seat and a seat moving system positioned between the occupant seat and the body to permit the occupant seat to move relative to the body upon a sufficient impact load being applied to the vehicle.

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172. (New) A vehicle suspension system according to Claim 171, wherein the seat moving system comprising a slide system positioned between the occupant seat and the body to permit the occupant seat to slide in a controlled manner relative to the body upon a sufficient impact load being applied to the vehicle.

173. A vehicle suspension system according to Claim 172, wherein the seat slide system further comprising a sensor system to sense the acceleration or deceleration of the vehicle and upon a threshold level of acceleration or deceleration being sensed, the sensing system causing the seat side system to slide the seat in the direction in which the vehicle is accelerating or decelerating.

174. (New) A vehicle suspension system according to Claim 170, wherein the body moving system comprising a slideway structure carried by either the body or the tie structure and a slider structure slidably engageable with the slideway structure and carried by the other of the body or the tie structure.

175. (New) A vehicle suspension system according to Claim 170, wherein the body moving system permits the body to detach from the tie structure upon an impact load of sufficient magnitude being applied to the vehicle.

176. (New) A vehicle suspension system according to Claim 170, further comprising quick-release connectors for connecting the vehicle body to the tie structure for supporting the body, wherein the tie structure can be utilized with bodies of different shapes or configurations.

177. (New) A vehicle suspension system according to Claim 170, further comprising an actuating system connected between the body and the tie structure to apply a load to the body

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upon application of a sufficient impact force on the tie structure to move the body relative to the tie structure in a direction away from the location of the impact force applied to the tie structure.

178. (New) A vehicle suspension system according to Claim 177, wherein the actuating system receives a signal relative to the location and magnitude of the impact force applied to the tie structure, and whereupon the actuating system applies a load to the body in relationship to the signal received by the actuating system.

179. (New) A vehicle suspension system according to Claim 178, wherein said vehicle further comprising at least one bumper and the actuating system connected between the frame and the said at least one bumper.

180. (New) A vehicle suspension system according to Claim 178, wherein the actuating system includes a fluid actuator interconnected between the tie structure and the body.

181. (New) A vehicle suspension system according to Claim 177, wherein the tie structure may continue moving toward the direction that the impact load is applied to the tie structure while the body moves relative to the tie structure in a direction away from the location that the impact load is applied to the tie structure; and

further comprising at least one occupant seat and a seat moving system positioned between the occupant seat and the body to permit the occupant seat to move in the direction of the impact load applied to the tie structure.

182. (New) A vehicle suspension system according to Claim 170, wherein the actuating system comprises a linkage system interposed between the body and the tie structure to

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force the body to move relative to the tie structure in a direction away from the location that the impact load is applied to the tie structure.

183. (New) A vehicle suspension system according to Claim 182, wherein the vehicle further comprising at least one bumper assembly, and said linkage system interposed between the at least one bumper assembly and the tie structure.

184. (New) A vehicle suspension system according to Claim 170, wherein the tie structure is longitudinally extendable and contractible.

185. (New) A vehicle suspension system according to Claim 89, wherein the tie structure comprising an axle of the vehicle.

186. (New) A vehicle suspension system according to Claim 89, wherein during the pitching or rolling of the vehicle, the body, and/or the tie structure imposing a load on the vehicle suspension system toward the ground, even during high speed cornering and braking.

187. (New) A vehicle suspension system according to Claim 89, further comprising at least one occupant seat, wherein said at least one occupant seat is located in the vehicle body and/or on the vehicle body.

JEN:hjd

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